

REMARKS

A new title has been provided as requested by the Examiner.

Claims 1 and 6 stand rejected under 35 U.S.C. §102(b) as anticipated by Suzuki. While the Applicants strenuously disagrees with the Examiner's position that claims 1 and 6 are anticipated by Suzuki, Applicants have canceled the originally filed claims and have submitted a new set of claims to more clearly and completely claim the disclosed invention.

As set forth in claim 8, Applicants' ultrasonic vibration apparatus includes a "disk like vibration plate having a circular vibration surface, said vibration surface having an outer periphery." Claim 8 further calls for a support member "coupled to said disk like vibration plate along a circular path located inside said outer periphery of said circular vibration surface so as to divide said vibration surface into inner and outer regions." Finally, "a piezoelectric element [is] coupled to said central region to cause said inner and outer regions to vibrate in substantially the same phase."

Among the limitations of claim 8 which are neither disclosed nor suggested in Suzuki et al. or the remaining art of record is the use of a disk like vibration plate which is supported by a support member "along a circular path located inside said outer periphery of said circular vibration surface so as to divide said vibration surface into inner and outer regions" and which has a piezoelectric element coupled to the central region "to cause said inner and outer regions to vibrate in substantially the same phase." This significantly improves the directivity of the ultrasonic waves propagated by the ultrasonic vibration apparatus and overcomes various problems in the prior art noted in Applicants' specification. Accordingly, claim 8 is believed to be directed towards patentable subject matter.

Claims 9-21 depend from claim 8 and include all the limitations found therein. These claims recite additional limitations which, in combination with limitations of claim 8, are neither disclosed nor suggested in the art of record.

For example, claim 19 specifies a "groove located directly below said outer region and a vibration damping member located in said groove." As discussed in the first full paragraph of page 11 of Applicants' specification, the presence of such a vibration damping member reduces the presence of undesired reverberations.

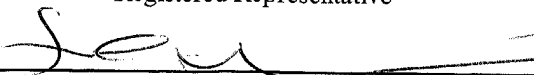
The Examiner has cited Issartel as disclosing this feature of Applicants' invention. This is not the case.

Issartel teaches that a filler should be used in the grooves 55 of the composite piezoelectric vibrator shown in Figure 4 to avoid a specific problem. Particularly, Issartel teaches that the laminated block of Figure 4 must be pressed and fired for sintering. If there was no filler in the grooves 55, "the still plastic piezoelectric ceramic material is constrained and will fill said gap, so that said consecutive tiles become jointed by mutually blending in this area." Issartel teaches that in order to avoid this problem (joining of adjacent tiles during compression and sintering), a filler material should be placed in the grooves. Summarizing the foregoing, Issartel teaches that when adjacent ceramic tiles have a gap therebetween and are to be subject to compression and sintering, a filler material should be placed in the gaps for the purpose of preventing adjacent tiles from blending together.

Applicants' ultrasonic vibration apparatus will not be subject to compression and sintering and there is no concern that the disk like vibration plate will adhere and become integral with any other element of the apparatus during such pressing and sintering. As such, one of ordinary skill in the art would have no motivation for adding a filler material to the groove located below the disk like vibration plate absent Applicants' disclosure.

In view of the foregoing, it is believed that the application is now in condition for allowance. Reconsideration and allowance of the application are earnestly solicited.

I hereby certify that this correspondence is being deposited with the United States Postal Service with sufficient postage as First Class Mail in an envelope addressed to: Assistant Commissioner for Patents, Washington, D.C. 20231, on September 5, 2001:


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Signature
September 5, 2001

Date of Signature

SIW:lac

Respectfully submitted,



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APPENDIX B
Version with Markings to Show Changes Made
37 C.F.R. § 1.121(b)(iii) and (c)(ii)

SPECIFICATION:

Title at page 1, line 1:

ULTRASONIC VIBRATION APPARATUS USE AS A SENSOR HAVING A
PIEZOELECTRIC ELEMENT MOUNTED IN A CYLINDRICAL CASING AND GROOVES
FILLED WITH FLEXIBLE FILLER